

DOWNSTREAM



Number 10 Spring 2004

A Newsletter Provided by
DCR Division of Water Supply Protection

LOONS: Aquatic Neighbor, Scientific Helper *by Paula Packard*



Loons were at one time rarely seen, but now they are becoming more common.

The focus of this issue of *Downstream* is one of our more reserved aquatic neighbors with whom we presently share the Quabbin and Wachusett Reservoirs. The common loon (*Gavia immer*) prefers water bodies with minimal human activity; however, the loss of such habitat in recent years has caused them to become more tolerant of people. Loons are particularly sensitive to changes in their environment, making them an important “indicator” species that warrant close monitoring. Any subtle changes in their surroundings can affect their behavior, and this serves the scientific community well in maintaining a healthy environment.

General Description of a Loon

Loons are relatively large birds, weighing up to 8 pounds. They have a streamlined body, with webbed feet and legs that are located far back on their body, that makes them excellent swimmers and divers but very awkward on land. While most birds have hollow bones to make flight easier, loons have semi-solid bones to facilitate diving. Loons have been known to dive as deep as 600 feet and are able to hold their breath for up to 15 minutes. They prefer large, pristine bodies of water with ample fish. In murky water bodies with fewer fish, loons will resort to eating crayfish and any other type of food they may find.

Most people picture loons with beautiful black and white coloration. This is actually their breeding plumage. During the winter loons are a drab gray/black color on top and white on the bottom, often making them difficult to distinguish from other large water birds. Loons migrate out to sea when lakes and large ponds freeze in winter, and come back inland with the spring thaw. Evidence suggests that they return to the same place every year.

Reproduction & Young

Loons mate for life. Each year, mated pairs produce one or two olive-colored eggs. To reduce losses from predators, loons prefer to nest on small islands, scratching together some vegetation and soil to form a simple nest close to the water’s edge. This is not a problem in water bodies with steady water levels, but for loons nesting on islands located in reservoirs, fluctuating water levels can create difficulties. If water levels rise, the nest and eggs flood and will not hatch. Because loons are very awkward on land, if water levels recede more than 6 to 12 inches, the nest will be abandoned. To reduce losses at Wachusett and Quabbin Reservoirs, the DCR builds and sets out “loon rafts.” These rafts are constructed of cedar logs, foam floatation, and wire. Vegetation is placed on the raft (to make it seem like a small island) and the raft is floated and anchored in the loons territory. Because the raft floats, it protects the nest and eggs from being flooded or stranded. The loons may utilize the raft immediately or they may take a few years to decide to use the raft. Avian predator canopies have been

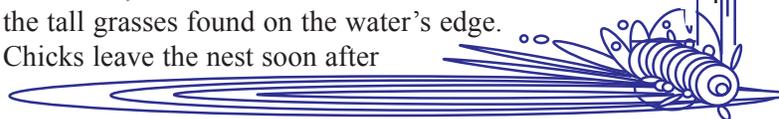
This man-made loon raft floats on the Quabbin Reservoir, where water levels fluctuate, providing a safe home for a loon pair to nest. The canopy prevents predation from overhead.



added to protect the nests from predation by other birds such as eagles. These canopies consist of a wire screen covered with camouflage cloth that is placed like a tent over the raft. An added benefit to the canopies is that they also provide some shade for the nesting birds.

Newly hatched loon chicks are covered with soft, dense, fuzzy down which helps to keep them warm. This is replaced by a new coat of down which is in turn replaced by true feathers. The chicks are fed small fish supplied by the parents, who are in constant attendance. When threatened, loons will often “stash” the chicks in brush or the tall grasses found on the water’s edge.

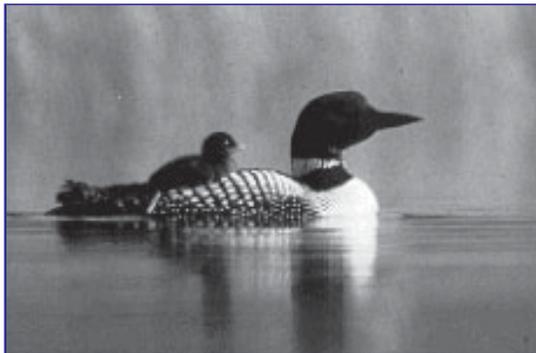
Chicks leave the nest soon after



This down-covered loon chick is just a few hours old. Within a few days, it will be swimming and diving under the water on its own, but it will remain under constant parental supervision for several months to come.



hatching and may be seen riding on the parents back, bobbing up and down in the water, or resting and keeping warm under a parental wing. Often all that may be seen of the chick is a small head poking up between the parent's feathers! They begin diving within a few days of birth and are independent but within close watch of an adult. One parent will go off to find food while the other watches the chicks. Chicks grow quickly and are ready to fly as winter approaches.



A loon chick riding on the back of a parent bird.

Conservation Status and Efforts

Loons are protected by both Federal and Massachusetts regulations. There are ongoing efforts to help them successfully reproduce and learn more about their lives. Because loons are one of the consumers at the top of the food chain, they are especially susceptible to contaminants, particularly lead and mercury. Lead fishing sinkers have been prohibited at the Wachusett and Quabbin Reservoirs to reduce the possibilities of ingestion and poisoning of the loons. Biologists can estimate the amount of mercury being deposited in the local waters through atmospheric deposition by testing loons blood, eggs, and feathers.

During the breeding season, loons at the Wachusett, Quabbin, and Hycrest Reservoirs are monitored weekly. DCR staff try to determine as closely as possible when the eggs are laid and, therefore, when they should hatch. When

the chicks are approximately three weeks old, any unhatched eggs are collected for analysis, and attempts to band any unbanded adults are made. Since loons are elusive and difficult to catch, this is not an easy task!

Capture and Banding of Loons

Loons are territorial and very protective of their young. When chicks are about 3 weeks old, DCR biologists, with the assistance of a biologist from Biodiversity Research Institute (loon specialists), attempt to capture and band the adult loons and their chicks. Only loons with chicks may be captured using the technique described on page 3 (Night



Banding makes it possible to track the activity of individual loons and helps develop an overall idea of the success of the population. This young loon has been banded, with the yellow tag on leg) and is about to be returned to the wild.

Banding). Adults with no chicks are not very territorial and are impossible to catch with this method. Loons are often not reproductively successful, so if a loon pair has no chicks one year, the DCR waits and tracks them for the next year.

Paula Packard is the assistant to the Wildlife Biologist at the Dept. of Conservation and Recreation/Office of Water Supply Protection.

Further Reading

for more information about loons...

Klein, T. 1985. *Loon Magic*. Northwood Press, Inc. 163pp.

DeGraaf, R. M. and M. Yamasaki. 2001. *New England Wildlife: Habitat, Natural History and Distribution*.

We've Changed Our Name!



A major reorganization occurred last July within the Executive Office of Environmental Affairs. Chapter 26 of the Acts of 2003, sct. 290 created the new Department of Conservation and Recreation (DCR) by merging the Metropolitan District Commission (MDC) and the Department of Environmental Management (DEM). The responsibilities of the former MDC Division of Watershed Management have been transferred in their entirety to the Office of Watershed Management within the Division of Water Supply Protection. The names have changed, but the mission of the Office of Watershed Management remains constant: to provide pure water through responsible land management.

Visit the Office of Watershed Management online at: www.state.ma.us/mdc/water.htm

Night Banding

The Nocturnal Adventures of a Wildlife Biologist - by James Taylor

The July sun has just set, and as the magenta sky fades to deep blue we prepare our small boat for a night's work in total darkness. As we lie in wait, calm surrounds us, punctuated only by the occasional wistful call of a loon in the distance and the soft slap of the water at the sides of the boat. When total darkness falls, we slowly motor toward the territory of the loons we hope to band. As we move along slowly, one assistant leans over the front of the boat carefully sweeping the water's surface with an intensely bright spotlight. In the center of the boat, a biologist using binoculars whispers instructions as we search for the loons and their chicks. Suddenly, the distinctive form of a loon is spotted up ahead. Inside anticipation builds for the scenario that is about to unfold, but outwardly we quietly and steadily hold the course. To minimize stress to the loons and to allow us to get a little closer, we switch from the gasoline outboard motor to a silent, electric trolling motor. As we draw near, our spotlight is hypnotically fixed into the loon's eyes and a recording of an adult loon or a chick's call is broadcast. Predictably, the loon approaches the boat thinking that either there is an encroaching loon in the territory or that there is a chick in distress. Often within a few confused seconds, the loon figures out that something is amiss and dives quickly. Use of the bright light directed downward into the water makes it possible to see the loon swim below the surface. As we follow the loon's course, we can often utilize our long handle net to capture it underwater as if it were a fish passing along side and under our boat. If the attempt fails, a replay of the tape recording helps to "call" it in again for another try.

When the loon is netted, it is quickly scooped up and gently set in the bottom of the boat, with a towel placed over its head, which disorients the bird and makes it quiet down, avoiding self-injury and reducing the some of the stress from being captured. If a chick is also close by, it too is netted, and very tenderly handled. Then the loon is carefully disentangled from the net and we head for

shore. Only one parent is captured at a time so that the chicks always remain safe and well cared for.

On shore, the captured loon is tagged with a color-coded leg band, enabling future observers to determine the identity of each bird from a distance. A metal band with a contact phone number is also placed around the loon's leg so that if later found dead or injured, information, such as age of the bird, travel distance from origin, and other conditions, may be gathered. Bands are unique to each individual and, in time, can be expected to yield a wealth of information on their behavior and possibly forewarn of significant environmental changes.

Next, blood is drawn from each bird. This will be tested for contaminants such as mercury, PCBs, and lead. DNA analysis is also done. Feathers are taken to test long-term exposure to environmental toxins; birds are measured and weighed. We work quickly, gently, and quietly to minimize stress to the bird. After our work is done, the bird is released into the water where it returns to its territory. We collect up our gear and set off to look for our next loon.

Depending on how long it takes to pursue and catch each loon, we may be able to band 2 or 3 pairs in a night's work. As the dawn sky begins to glow and the next day's sun begins to rise, we head back to shore, clean and pack our gear and then head for home to get some

rest so we will be ready to do it all again the next evening. While the intense concentration can make the night hours draining, this important research along with the information gleaned in the lab can provide very important pieces to the puzzle of good environmental management.



And Another Thing...

by J. Taylor



"You're nearly grown up now, get off my back!"

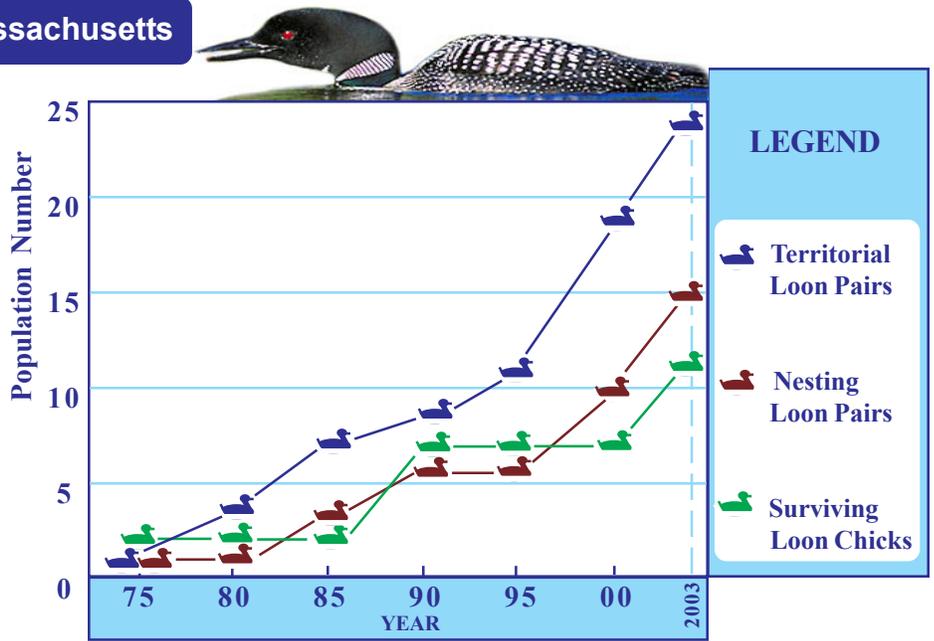
Downstream is produced twice a year by the Massachusetts Department of Conservation and Recreation/Office of Water Supply Protection. It includes articles of interest to residents of the watershed system communities. Our goal is to inform the public about Watershed Protection issues and activities, provide a conduit for public input, and promote environmentally responsible land management practices.

- | | |
|----------------------|----------------------------------|
| Governor: | Mitt Romney |
| Lieutenant Governor: | Kerry Healey |
| EOEA Secretary: | Ellen Roy Herzfelder |
| DCR Commissioner: | Katherine F. Abbott |
| DWSP Director: | Joseph M. McGinn, Esq. |
| Contributors: | Paula Packard James E. Taylor |

Loon Population Trends in Massachusetts

While historical literature commonly makes mention of loons, there is little scientific documentation regarding past loon population activity. As humans have encroached on nature, the loon has typically retreated further into the wild. Only within the last few decades have loons been observed claiming territory and breeding in closer proximity to people.

This graph shows the beginnings of loon survivability data. In Massachusetts from 1975 to 1983 loon pair activity was only observed on the Quabbin Reservoir. From 1984 on, loon activity was also observed on the Wachusett Reservoir. After 1986, loon activity began to spread to other waterbodies in the state. As of 2003, loon pairs have been documented at 10 waterbodies in Massachusetts.



Information provided by 2003 Massachusetts Common Loon Population Survey. BioDiversity Research Institute.

We value the contribution your well cared-for land provides and welcome the opportunity to work with you. Please feel free to send us questions and comments about this newsletter, or contact us if you wish to learn more about programs and assistance available to help landowners. Our address and contact phone number is shown below.

DOWNSTREAM
INSIDE

Loons

The following topics are discussed:

| | |
|--------------------------------|---|
| General Description and Habits | 1 |
| Conservation Efforts | 2 |
| Further Reading | 2 |
| A Night Banding Adventure | 3 |
| Loon Population Trends | 4 |

TO:



DOWNSTREAM
Department of Conservation and Recreation
Division of Water Supply Protection
180 Beaman Street
W. Boylston, MA 01583-1199
Phone (508) 835-4816 ext.363